Demand Response Research Center's Open Automated Demand Response (OpenADR) Achieves National Success

The Demand Response Research Center (DRRC) conducts research aimed at advancing the adoption of demand response technologies and policies. Demand response reduces peak demand, and helps facility managers recognize opportunities for improving energy efficiency.[1] Automated demand response (OpenADR) is the process of signaling buildings and facilities to reduce power consumption during periods high energy price or grid demand through a pre-determined set of actions. In AutoDR, these actions are implemented using Internet messages and building control systems. OpenADR is the non-proprietary information exchange model that is used in AutoDR implementations.

The DRRC has established a strong base of research since 2004. Its success and the achievement of its original PIER mission can be observed by examining four key areas of accomplishment:

Key regulatory and policy accomplishments

AutoDR implementations using OpenADR

Adoption and implementation of its research by non-utility competitive market providers, and

Its visibility and recognition as a DR thought and product leader outside of California and throughout the world

To achieve its objectives, DRRC's activities since 2004 have been guided by five critical tasks:

1. **Create a roadmap to guide California DR research.**
2. **Establish multi-institutional partnerships.**
3. **Pursue outreach efforts to foster connections with customers, vendors, utility companies, and other stakeholders.**
4. **Sustain long-term attention to DR research.**
5. **Conduct research, development, demonstrations, and technology transfer.**

[1] "The PIER Demand Response Research Center (DRRC) was established in spring 2004 by the California Energy Commission to conduct research that advances the near-term adoption of demand response (DR) technologies, policies, programs, strategies and practices. While the DRRC focus is on California needs, there is clear recognition that many of California's demand response problems and issues are universal within North America and other parts of the world." Demand Response Research Center Scoping Study Roundtable Issue Paper, November 9, 2004.

Key Regulatory and Policy Accomplishments

- OpenADR is identified by National Institute of Standards and Technology in 2009 as one of the initial 16 smart grid standards.
- A 2006 CPUC assigned-commissioner ruling mandated the implementation of AutoDR using OpenADR.
- Provided research, demonstration projects, and support for the CPUC 2008 decision adopting default dynamic pricing for all California investor-owned utility customers.

OpenADR/AutoDR Implementations

- Projected implementation of AutoDR applications by investor and municipal utilities in California in 2011 that will account for approximately 160 MW of peak load relief.
- Projected implementation and operation of OpenADR DR applications in Washington, Oregon, Nevada, Florida, and New York.
- Development of Open Source OpenADR capability by Utility Integrated Solutions, Inc. (UISOL)

Non-Utility Competitive Market Impacts

- Honeywell purchased Akuacom, the co-authors on the OpenADR specification, and announced national support for OpenADR in their commercial energy management applications nationally.
- UISOL developed the DRBizNet© Demand Response Management System which is based on an OpenADR platform and:
  - implemented by the California Independent Systems Operator (CAISO), Midwest ISO, and PJM.
  - integrated with products and systems from Tendril, Universal Devices, Alektrona, and AREVA T&D.
- Approximately 60 vendors have implemented/embedded OpenADR software clients in their energy management or control systems.

Visibility and Recognition

- OpenADR was identified by earth2tech as one of nine key accomplishments necessary in 2011 to make the smart grid a success.[2]
- The Power of Dynamic Pricing," a DRRC-sponsored research paper on rate design published in the *Electricity Journal*, was identified by the Social Science Research Network as one of the top ten downloads for 2010.
- OpenADR was a key feature for the two highest-rated (and only two) projects selected by the New York State Energy Research and Development Authority (NYSERDA) for DR grant awards from among 13 submittals in a mid-2010 competitive bid.
- There have been inquiries and development interest from eight countries in Europe, Asia, and the Middle East.

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[2]Fehrenbacher, Katie. 2010. "*What the Smart Grid Needs in 2011.*" Earth2Tech. December 28. http://www.reuters.com/article/idUS107008175820101228

Related Links:

Demand Response Research Center and Publications: http://drrc.lbl.gov/drrc-pubs.html
OpenADR Website: http://openadr.lbl.gov
OpenADR Alliance: http://www.openadr.org/

Key OpenADR Articles and Materials:

CEC OpenADR-Version 1.0 Report. Piette, M.A., G. Ghatikar, S. Kiliccote, E. Koch, D. Hennage, P. Palensky, and C. McParland. 2009. *Open Automated Demand Response Communications Specification (Version 1.0)*. California Energy Commission, PIER Program. CEC-500-2009-063 and LBNL-1779E.

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